FreeSpace® DS 100SE Loudspeaker

TECHNICAL DATA SHEET

Product Overview

The Bose® FreeSpace® DS 100SE loudspeaker is a high-performance, surface-mount loudspeaker designed for foreground music and speech reproduction in a wide range of commercial applications, including retail, restaurant and hospitality establishments.

This 100-watt loudspeaker can be installed up to 30ft (10m) high, both indoors and outdoors. The contemporary styling easily blends with a wide variety of décors. Horizontal or vertical mounting options offer installation flexibility. The DS 100SE loudspeaker meets numerous standards for combination music and evacuation systems around the world when used with the optional junction boxes.

Product Information

The FreeSpace DS 100SE surface-mount loudspeaker is engineered for installation on walls and other solid surfaces. Simple 1-2-3 installation: (1) Wire and attach the wall bracket (2) Secure the loudspeaker to the wall bracket with one screw (3) Snap the wire connector into the wall bracket. The included bracket allows for horizontal or vertical mounting positions, each with either pitch or yaw adjustment.

The DS 100SE loudspeaker can be used as an 8-ohm, 100-watt loudspeaker or as a 70/100V loudspeaker. An easy-to-access thumbwheel allows taps to be set quickly and simply without the use of tools.

Two Twiddler® drivers in a proprietary Articulated Array® loudspeaker design provide a 180°H x 75°V dispersion pattern out of the box when the loudspeaker is mounted horizontally. The array can be rotated easily to maintain this wide horizontal dispersion pattern when the loudspeaker is installed in the vertical orientation.

Performance of the FreeSpace DS 100SE loudspeaker can be maximized through the use of the recommended Bose loudspeaker equalization resident in select Bose electronics, or by using other equipment with parametric equalization. The loudspeaker can be used out of the box with a 55-Hz high-pass filter when recommended loudspeaker equalization is not used. The DS 100SE loudspeaker is acoustically compatible with the DS 100F flush-mount loudspeaker and can be integrated on the same loudspeaker line.

Key Features

- Maximum SPL of 105 dB-SPL (peak 111 dB-SPL)
- Full-range performance from 65 Hz to 16 kHz
- 180°H x 75°V coverage pattern (out of the box, when the loudspeaker is mounted horizontally)
- Two 2.25" (57mm) Twiddler drivers in a proprietary Articulated Array loudspeaker design and a separate 5.25" (133mm) driver
- Simple 1-2-3 installation
- Pitch or yaw adjustment options:
  Horizontal mount: maximum pitch 45° or maximum yaw 30°
  Vertical mount: maximum pitch 30° or maximum yaw 45°
- Integrated multi-tap transformer provides easy-to-change tap settings without tools:
  70V – 12.5W, 25W, 50W, 100W
  100V – 25W, 50W, 100W
- Can be used as an 8Ω, 100W loudspeaker
- Can be used indoors and outdoors and can be painted
- Listed to ANSI/UL 1480-2005

Applications

The FreeSpace DS 100SE loudspeaker is well-suited for permanent installations at:

- Retail stores
- Transportation facilities
- Hospitality venues
- Concourses
- Restaurants
- Houses of worship

FreeSpace® DS 100SE
Loudspeaker

TECHNICAL DATA SHEET

Detailed Product Specifications

Power handling[1]	100W
Nominal Impedance (transformer bypass)	8Ω
Sensitivity[2] (at 1W @ 1m)	85 dB-SPL
Maximum SPL[3] (pink noise @ 1m @ rated power)	105 dB-SPL 111 dB-SPL (Peak)
Frequency range[4] (-3 dB)	65 Hz – 16 kHz
Beamwidth (-6 dB point, average 1– 4 kHz)	180°H x 75°V

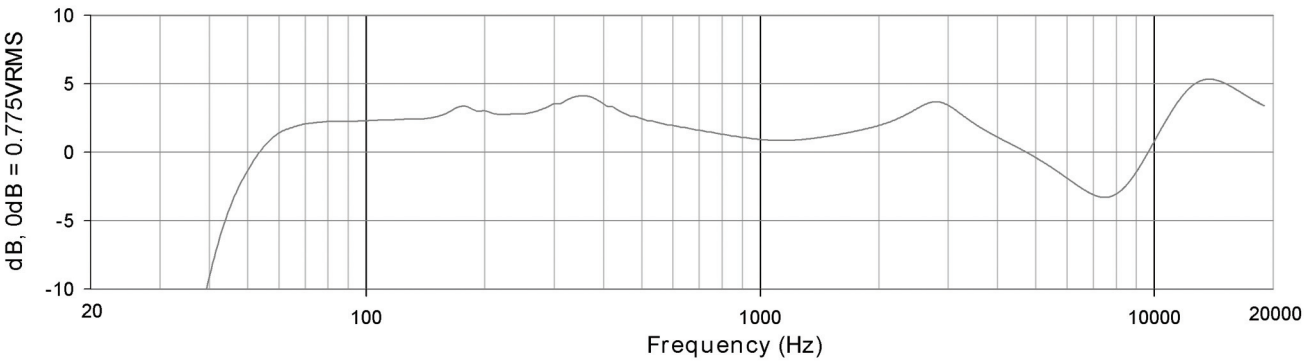
[1–4] See "How our Loudspeakers are Measured" on page 8.

Additional Product Information

This product is equipped with a protection circuit that will reduce the high frequencies to an audibly lower level when the loudspeaker is overdriven. In the event the protection circuit is activated, reduce the input level.

Performance of the FreeSpace® DS 100SE loudspeaker can be maximized through the use of the recommended Bose® loudspeaker equalization resident in select Bose electronics or by using other equipment with parametric equalization. The loudspeakers can be used out of the box with a 55-Hz high-pass filter when the recommended loudspeaker equalization is not used.

Recommended Loudspeaker Equalization Curve



FreeSpace® DS 100SE
Loudspeaker

Driver complement:
Two 2.25" (57mm) Twiddler® drivers in an Articulated Array® loudspeaker design
One 5.25" (133mm) woofer

Construction features:
Enclosure: PC/ABS
Grille: Powder-coated steel

Dimensions:
Loudspeaker only:
8.5"D x 15"W x 7"H (216mm x 381mm x 178mm)

Loudspeaker with wall mount bracket:
11"D x 15"W x 7"H (280mm x 381mm x 178mm)

Weight:
Product (with wall-mount bracket): 14lb (6.4kg)
Shipping (with wall-mount bracket): 16.9lb (7.7kg)

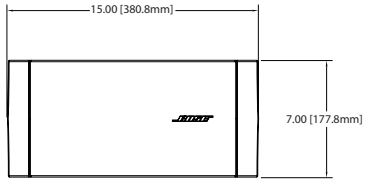
Package contents:
Loudspeaker, mounting bracket and installation guide.

Finish:
Textured black or white finish with a contoured, powder-coated steel grille. Both the enclosure and grille can be painted.

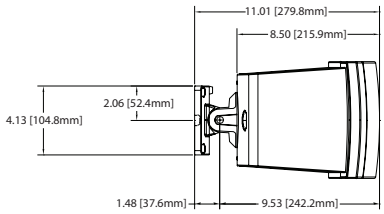
Connectors:
The included mounting bracket features a three-terminal barrier strip. Optional junction boxes provide a ceramic connector and a thermal fuse for use when required.

Mechanical diagrams:

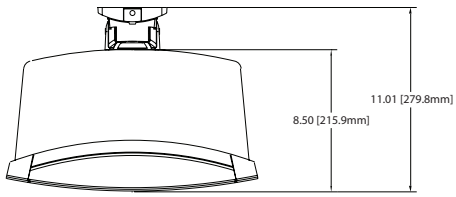
Front View



Side View



Top View



Design Recommendations

When creating a design that uses the FreeSpace® DS 100SE loudspeaker, you should consider the following:

- Recommended mounting height is between 8 and 26ft (2.4 and 8m).
- Provide at least 20ft (6.1m) of space between adjacent loudspeakers for typical applications.
- In outdoor applications, do not space the loudspeakers by more than 50ft (15.2m).
- Generally, the FreeSpace DS 100SE loudspeaker should be pitched downward between 0 and 15 degrees.
- Maximum SPL for a typical application is between 89 and 98 dB-SPL.
- Always add 25% headroom to your amplifier to accommodate various types of program material.

Use the following recommended loudspeaker spacing guidelines for typical mounting heights between 12 and 22ft (3.6 and 6.7m), as coverage requirements and loudspeaker spacing will vary.

Coverage	Loudspeaker Spacing Distance
Premium	40ft | 12m
Standard	50ft | 15m
Minimum	55ft | 17m

Total system SPL varies based on the mounting height, tap setting and room acoustics. For typical applications, use the chart below to determine the total SPL.

DS 100SE												
Mount Height	m	2.4	3.0	3.6	4.2	4.8	5.5	6.1	6.7	7.3	8.0	10.0	
	ft	8	10	12	14	16	18	20	22	24	26	32	
TAP (W)	12.5*	89	88	88	87	86	85	84	83	83	82	80	dB-SPL
	25	92	91	91	90	89	88	87	86	86	85	83	
	50	95	94	94	93	92	91	90	89	89	88	86	
	100	98	97	97	96	95	94	93	92	92	91	89	

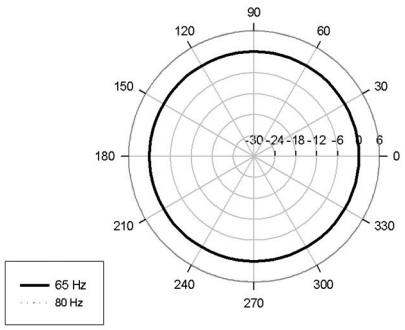
**12.5-watt tap available only in 70V mode.*

For more detailed information, refer to the DS 100SE loudspeaker Design Guide.

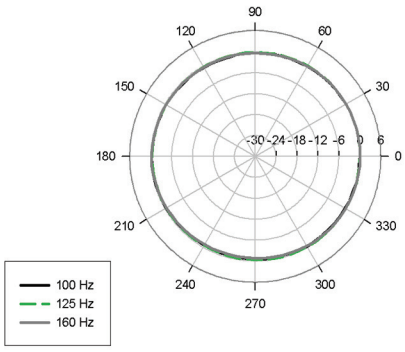
BOSE®

Polar Plots ⅓ Octave Horizontal

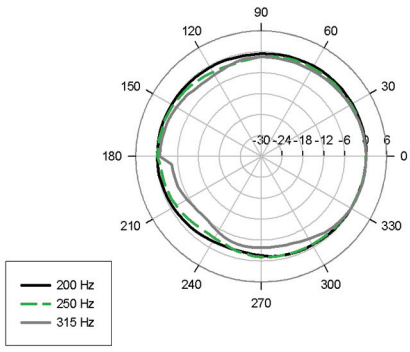
63 Hz Octave Band



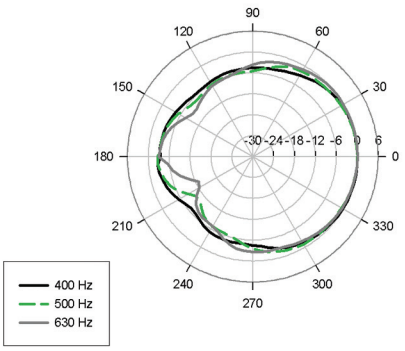
125 Hz Octave Band



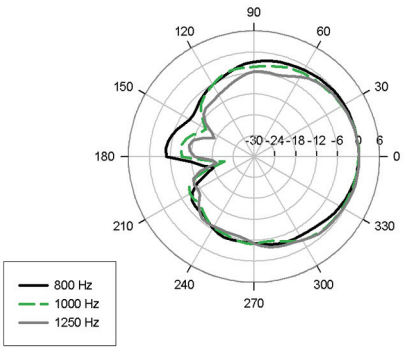
250 Hz Octave Band



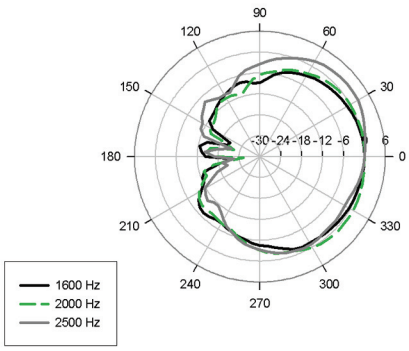
500 Hz Octave Band



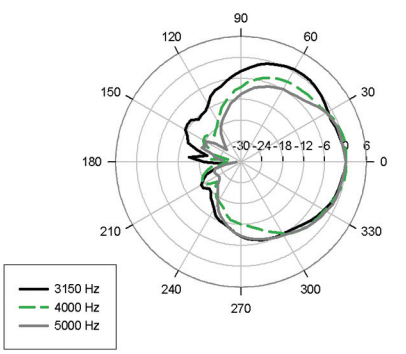
1000 Hz Octave Band



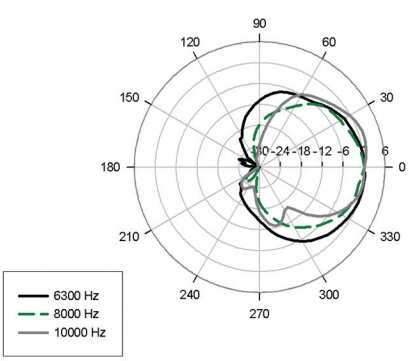
2000 Hz Octave Band



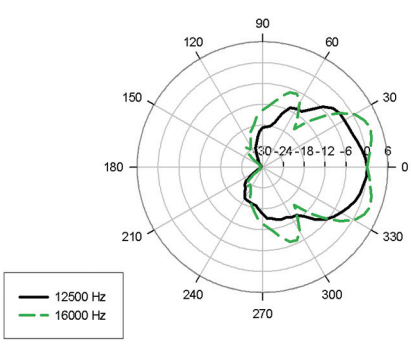
4000 Hz Octave Band



8000 Hz Octave Band

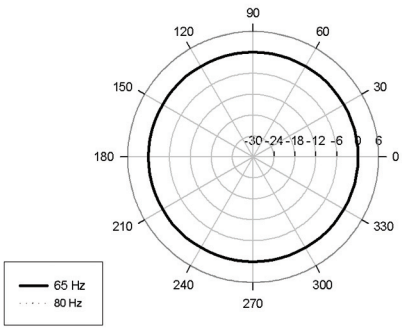


16000 Hz Octave Band

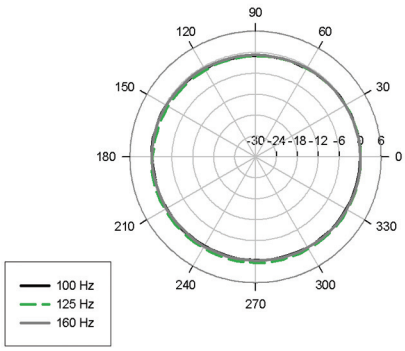


Polar Plots ⅓ Octave Vertical

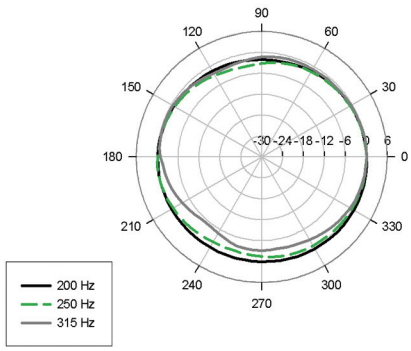
63 Hz Octave Band



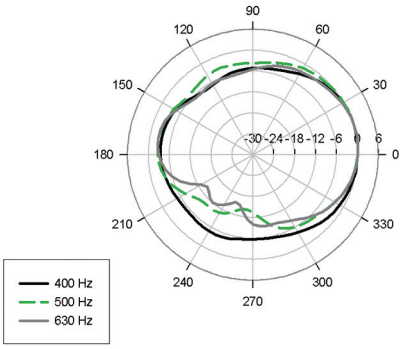
125 Hz Octave Band



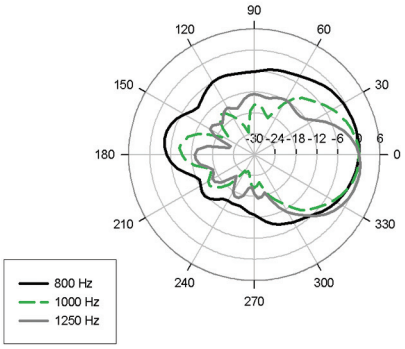
250 Hz Octave Band



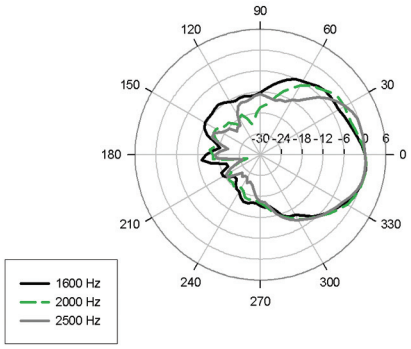
500 Hz Octave Band



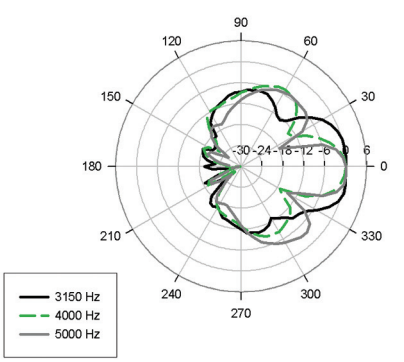
1000 Hz Octave Band



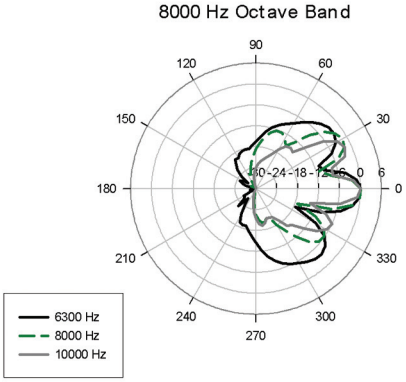
2000 Hz Octave Band



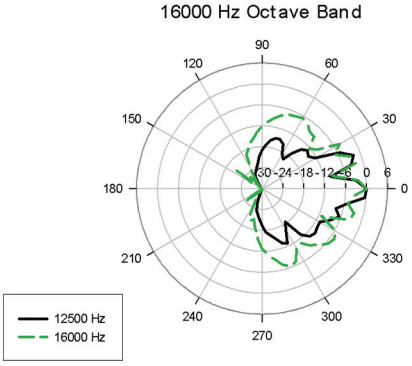
4000 Hz Octave Band



8000 Hz Octave Band



16000 Hz Octave Band



Engineers' and Architects' Specifications

Each loudspeaker shall be a 100-watt, ported loudspeaker system utilizing two 2.25" (57mm) mid-high frequency drivers mounted vertically on a rotatable, faceted baffle and a separate 5.25" (133mm) woofer. The loudspeaker shall be used for installation on walls and other flat, solid surfaces.

Each loudspeaker shall have a nominal rated impedance of 8 ohms and shall be wired in parallel with a line voltage matching (step-down) transformer with an accessible, front-mounted level selector appropriate for setting various output taps. The loudspeaker input connections will allow for direct connection to either 70V, 100V or low-impedance amplifiers.

Exposed cosmetic surfaces of the loudspeaker shall be paintable, and the acoustically transparent grille component shall be formed of powder-coated steel.

Each loudspeaker shall have a bandwidth of 65 Hz – 16 kHz and a maximum acoustic output of 105 dB-SPL referenced to a full bandwidth pink noise input at 1 meter at the loudspeaker's rated power. The input connection shall consist of a three-position barrier connector on the included mounting bracket. Each loudspeaker shall be wired to the mounting bracket via a 4-pin, pre-wired connector.

Power settings available shall be: 12.5W, 25W, 50W, 100W @ 70V; 25W, 50W, 100W @ 100V; and 100W @ 8Ω (when referenced to IEC noise for 100 hours). The nominal dispersion shall be 180°H x 75°V at -6 dB (average 1 – 4 kHz).

When used with optional junction boxes, which include a ceramic connector and a thermal fuse, the loudspeaker shall meet numerous standards for combination music and evacuation systems around the world.

The loudspeaker shall be the Bose® FreeSpace® DS 100SE loudspeaker.

Safety and Regulatory Compliance

The FreeSpace DS 100SE loudspeaker has passed extensive testing and complies with the following specifications and uses:

Listed to ANSI/UL 1480-2005

- Fire Protective Signaling Use – UL Category UUMW, File Number S 3241.
  Control Number 42S9 when installed with a junction box (on-wall or in-wall).
  Not for use with DC-supervised systems.
- General-Purpose Use – UL Category UEAY, File Number S 5591 Control Number 3N89.
- The DS 100SE loudspeaker is suitable for use outdoors in wet locations.
- Suitable for installation using Class 1, Class 2 or Class 3 wiring methods in accordance with NFPA 70, *National Electric Code,* 2002, Article 640.
- Suitable for use with fire alarm circuit wiring methods in accordance with NFPA 70, *National Electric Code,* 2002, Article 760.

The DS 100SE loudspeaker has been designed to the requirements defined in the following European regulatory specification for combination systems:

- British Standard Code of Practice BS 5839, Part 8.
- Tested to IEC60268-5.

Limited Warranty

The FreeSpace DS 100SE loudspeaker is covered by a five-year transferable limited warranty.

FreeSpace® DS 100SE
Loudspeaker

TECHNICAL DATA SHEET

Product Codes

FreeSpace DS 100SE loudspeaker – Blk	PC 040806
FreeSpace DS 100SE loudspeaker – Wht	PC 040807

Accessories

Wall-mount bracket assembly – Blk	PC 315253-001
Wall-mount bracket assembly – Wht	PC 315253-002
Ceiling-mount bracket assembly – Blk	PC 323206-0110
Ceiling-mount bracket assembly – Wht	PC 323206-0210
Pole-mount kit – Blk	PC 323208-0110
Pole-mount kit – Wht	PC 323208-0210
Trim plate kit – Blk	PC 315266-001
Trim plate kit – Wht	PC 315266-002
On-wall junction box (6 pack) – Blk	PC 041865
On-wall junction box (6 pack) – Wht	PC 041866
In-wall junction box (6 pack) – Blk	PC 041867
In-wall junction box (6 pack) – Wht	PC 041868
Ceramic terminal and thermal fuse kit	PC 326668-0010

Replacement Parts

DS 100SE bracket wall mount – Blk	PN 315824–001S
DS 100SE bracket wall mount – Wht	PN 315824–002S
DS 100SE bracket speaker arm w/screw – Blk	PN 315821–001S
DS 100SE bracket speaker arm w/screw – Wht	PN 315821–002S
DS 100SE bracket hardware kit (bracket doors, strain relief assembly, speaker arm screws/washers) – Blk	PN 315827–001S
DS 100SE bracket hardware kit (bracket doors, strain relief assembly, speaker arm screws/washers) – Wht	PN 315827–002S
DS 100SE bracket pivot screw – Blk	PN 315829–001S
DS 100SE bracket pivot screw – Wht	PN 315829–002S
DS 100SE theft-deterrent pivot screw – Blk	PN 315831–001S
DS 100SE theft-deterrent pivot screw – Wht	PN 315831–002S
Grille w/fasteners – Blk	PN 299558
Grille w/fasteners – Wht	PN 299559
Logo – Blk	PN 303038–001
Logo – Wht	PN 303038–002
Grille endcap – Blk	PN 299560–001
Grille endcap – Wht	PN 299561–002
2.25" (57mm) driver w/gasket	PN 299562
5.25" (133mm) woofer w/gasket	PN 299563

How our Loudspeakers are Measured

1. Power handling

Full-bandwidth pink noise, meeting the IEC Standard #268-5, is applied to the loudspeaker and amplified to a level at the loudspeaker terminals corresponding to the power handling of the loudspeaker. The loudspeaker must show no visible damage or measurable loss of performance after 100 hours of continuous testing.

2. Sensitivity

Full-bandwidth pink noise is applied to the loudspeaker with its active equalization curve and amplified to a level at the loudspeaker terminals corresponding to 1 watt, as referenced to the nominal impedance. The average sound pressure level (dB-SPL) is measured at 1 meter from the speaker in an anechoic environment.

3. Maximum SPL

Full-bandwidth pink noise is applied to the loudspeaker with its active equalization curve and amplified to a level at the loudspeaker terminals corresponding to the long-term rated power handling of the speaker. The average sound pressure level (dB-SPL) is measured at 1 meter from the speaker in an anechoic environment.

4. Frequency range

Sine waves are injected into the loudspeaker, and the level is adjusted to 1 watt, as referenced to the nominal impedance, and the level measured at 1 meter. Resulting graph is smoothed by 0.05 octave-band.

BOSE®
Better sound through research®

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